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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/085,226

02/27/2002

William J. Parrish

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32605

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12/30/2003

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EXAMINER

SUNG, CHRISTINE

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 12/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/085,226

Applicant(s)

PARRISH ET AL.

Examiner

Christine Sung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23-45 is/are allowed.
- 6) ☒ Claim(s) 1,2,9,11 and 12 is/are rejected.
- 7) ☒ Claim(s) 3-8,10 and 13-15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 09/03 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Regensburger (US Patent 6,300,616).

Regarding claim 1, Regensburger discloses a radiation detector circuit (Figure 1) comprising

A detector (element 18);

A variable resistor coupled to the first microbolometer (element 30);

A biasing circuit (element 32) coupled to the first detector to provide a load current.

Regensburger does not specify that the detector element is a microbolometer, however, microbolometers are specific types of radiation detectors. Therefore it would have been obvious

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to one having ordinary skill in the art at the time the invention was made to have used a microbolometer in place of the generic detector if it were desired to measure radiation from heat.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Regensburger (US Patent 6,300,616) in view of Tanaka (US Patent 6,359,460).

The limitations set forth in claim 2 have been disclosed in the abovementioned paragraphs, however Regensburger does not disclose that the bias circuit is a second microbolometer. Tanaka discloses a bias circuit (Figure 1, element 120) for a bolometer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used a microbolometer for the biasing circuit if it is desired to measure thermal radiation.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Regensburger (US Patent 6,300,616) in view of Tanaka (US Patent 6,359,460) and further in view of Wand et al. (US Patent 6,267,501).

The limitations set forth in claim 2 have been disclosed in the abovementioned paragraphs by Regensburger in view of Tanaka, but do not specifically disclose a resistor coupled to a microbolometer, the resistor calibrated to adjust a temperature coefficient of resistance of the second microbolometer. However, Wand et al discloses a resistor whose value changes with changes in temperature and is used as a calibration tool (see column 2 lines 13-29) that is used to adjust the bolometer.

6. Claim 11-12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Regensburger (US Patent 6,300,616) in view of McManus (US Pre Grant Publication 2003/0006374).

Regensburger discloses the limitations set forth in claim 1 have been disclosed in the abovementioned paragraphs, but does not mention the use of a first voltage source coupled to the first bolometer to bias the first microbolometer. McManus discloses in page 2, paragraph 14, and a variable voltage source coupled to the bolometer to bias the bolometer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the circuit disclosed by McManus with the invention as disclosed by Regensburger in order to receive calibrated detector measurements accurately.

Regarding claim 12, Regensburger in view of McManus discloses the claimed invention except for a second voltage source coupled to the biasing circuit. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have included a second voltage source to the biasing circuit, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St Regis Paper Co. v. Bemis Co.*, 549 F.2d 833, 193 USPQ 8 (CA 7 1977).

Allowable Subject Matter

7. Claims 16-45 are allowed.
8. Claims 3-8, 10 and 13-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
9. The following is a statement of reasons for the indication of allowable subject matter:
10. Regarding claims 3, 10 and 16-22, none of the prior art of record specifically discloses the positioning of an amplifier coupled to a node between the first and second microbolometers to provide an output signal. Although, amplifiers, nodes and microbolometers are well known in

the art, none of the prior art of record discloses the specific coupling of the amplifier to the microbolometers as claimed in the claims.

11. Regarding claims 4-7 and 13-15, none of the prior art of record specifically discloses positioning a transistor between the first and second microbolometers to bias the amount of current flowing through the microbolometers. Although transistors are well known in the art, none of the prior art of reference discloses the specific positioning of the transistor and the microbolometers as claimed in the instant application.

12. Regarding claims 8 and 23-45, none of the prior art of record specifically discloses calibrating a variable resistor to compensate for temperature gradients between the active and reference bolometers or each bolometer cell in an array of bolometers. Prior art references such as Knauth (US Pre Grant Publication 2003/0146383) disclose calibrating the bolometers by exposing each bolometer to a uniform amount of radiation, recording the amount and creating a calibration curve to calibrate measured data. The calibration curve of known radiation data is then used to calibrate the measured data. The current application utilizes a variable resistor in each temperature compensation circuit to calibrate/compensate detector data.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. US Pre Grant Publication 2003/0146383-this reference discloses an output compensation apparatus for a bolometer.

b. US Pre Grant Publication 2003/0213910-this reference includes a temperature compensation circuit.

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- c. US Patent 5,756,999-this reference is a commonly assigned patent containing many similar elements to the claimed invention.
 - d. US Pre Grant Publication 2002/0040967-this reference discloses a first and second bolometer, where the second bolometer is only responsive to thermal radiation from the first bolometer.
 - e. US Patent 6,441,372-this reference discloses a bolometer array for detecting IR radiation.
 - f. US Patent 6,028,309-this reference is a commonly assigned patent including a method for correcting temperature induced errors.
 - g. US Pre Grant Publication 2003/0122077- this reference discloses a method/apparatus for temperature compensation of an uncooled focal plane array but does not include the specific circuitry elements as disclosed by the invention.
14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Sung whose telephone number is 703-305-0382. The examiner can normally be reached on Monday- Friday 7-4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 703-308-4852. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


Christine Sung
Examiner
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